PROGRAMED INSTRUCTION IN THE ARMY FY 66

by

James L. Sherrill

THERE are two parts to this paper. One part is a factual report on the Army's current effort with programed instruction. The other part is my own observations and personal opinions.

My discussion is centered around four topics. First, an overview of the training conducted by the Army. Second, our current effort with programed instruction. Third, the impact of programed instruction. And fourth, predictions as to where we are headed with PI during the next five years.

OVERVIEW

As is shown in Fig. 1, the Army conducts training in eleven training centers and about 35 schools. The main difference between training centers and service schools is essentially that the centers conduct basic training and low skill specialty training for enlisted personnel, while the service schools conduct officer and enlisted high skill specialty training. The centers conduct approximately 50 courses. At present their average daily training load is about 150,000 students. At our service schools, approximately 700 courses are conducted. Their average daily training load is about 70,000. As you can see, our repetitive volume training is in the training centers and our more diverse and specialized training is in the service schools.

Within this fiscal year, we have had about an 80% increase in our school training load and a considerable increase in our training center load. Eight of our schools are on double shifts and two are on triple shifts. This no doubt has had some impact on our activity with PI.

U. S. ARMY TRAINING

	TRAINING CENTERS (Enlisted Basic & Low Skill Specialties)	SCHOOLS (Officer Education & Enlisted Hard Skill Specialties)
Number	11	35
Courses	50	700
Load (In man years)	150,000	70,000

Figure 1

CURRENT ACTIVITY

We have approximately 380 programed instruction texts in use or under development by 22 of our schools. The bulk of the programs is concentrated at 10 of our schools.

Quite a number of these PI materials are used as home study assignments. In fact, this is somewhat of a trend in the use of programed instruction within our schools. One school deliberately set out at the start of its PI effort to shift as much as possible to homework assignments. The school was able to shift

over one hundred resident training hours to out-of-class study assignments using programed instruction texts. Another sizable portion is used as remedial training, which represents another significant trend.

A wide range of subjects has been programed. I will cite only a few examples.

We are now teaching the operation of a tube-testing set with PI.

Engineering drafting and the use of the related drafting tools are being taught with a PI text.

Unit artificers, the people who perform maintenance on weapons within the units, are now being taught disassembly, assembly, and malfunctioning of both the M14 rifle and the M60 machine gun by PI. The texts are used with the actual weapons. I should add that the training is accomplished in considerably less time than by the conventional training method.

As others have found, a significant time reduction is our typical experience with PI. Probably another experience we all share in common, a number of programs—perhaps more than we would like to admit—have been written, then abandoned; we didn't agree with the training objectives when we finally saw what they were. The "not-made-here" response and many other reasons are responsible.

One of our medical schools has made extensive use of PI (Brooke Army Medical Center, Fort Sam Houston, Texas). Now taught by PI are such subjects as "The Lymphatic System," "Mechanisms of Defense," and "Disease and Injury Codes," to name only a few.

One program of interest involves the use of a teaching machine. One of our schools has fabricated a semi-operable mock-up of a polygraph—the "lie-detector." Contained in this mock-up, is a single-role hand-operated PI text which teaches the operation of the polygraph. The mock-up, with the program, is issued to the student as a home work assignment. The school estimates savings of 10 hours and $200 in repair and parts replacement for each class.

We have two other significant projects. One concerns map reading. Map reading training is found in most of our service schools, our extension courses and in our ROTC college training courses. One of our schools is now identifying the common map reading training requirements and preparing appropriate portions in programed instruction form for use throughout the Army. A second project of interest involves the self-pacing of an entire course. The "Instrument Helicopter Flight Course" at the Aviation School is now being redesigned in self-paced proficiency advanced form. This may seem a strange choice at first glance, but from one viewpoint it is an excellent choice; flight training is expensive. One flight training hour costs about $400. One of the objectives of this project is to determine what savings will result from the self-pacing feature, particularly in flight training hours required. If an average of only one flight hour per student is saved, the cost of preparing this course in self-paced form will be more than regained. Additionally, the time saved in student training will solve one of the major problems of Army instruction: how to get well qualified men into the field faster. Part of this work is being performed under contract with the American Institute of Research. Both the contractor and the school see major problems but both are enthusiastic and confident that they can be overcome. This project will be completed in June, 1967.

Our civilian personnel organizations, though not classifiable with our service schools, provide considerable training for our civilian work force and have been quite active.

The first DA publication on PI was authored by the civilian personnel office at Department of the Army. Several locally developed programs have been adopted for Army-wide use; "Employee Management Cooperation," "Grievance and Appeal Procedures," and others.

A small program developed by Ryukyu Islands training officers (about 20 minutes in length), is aimed at informing overseas civilians about procedures for returning to CONUS employment. This program is given credit for a noteworthy improvement in applications for rotation to the states. Initial

tests of the same program in Europe indicate the same encouraging results.

Training officers at another location programed Army-required training on "Employee Recognition." The results were that the training was completed two months ahead of target and only one thousand man hours were expended, whereas **eight thousand man** hours would have been required had conventional methods been used.

In summary, we are quite active with PI and our efforts continue.

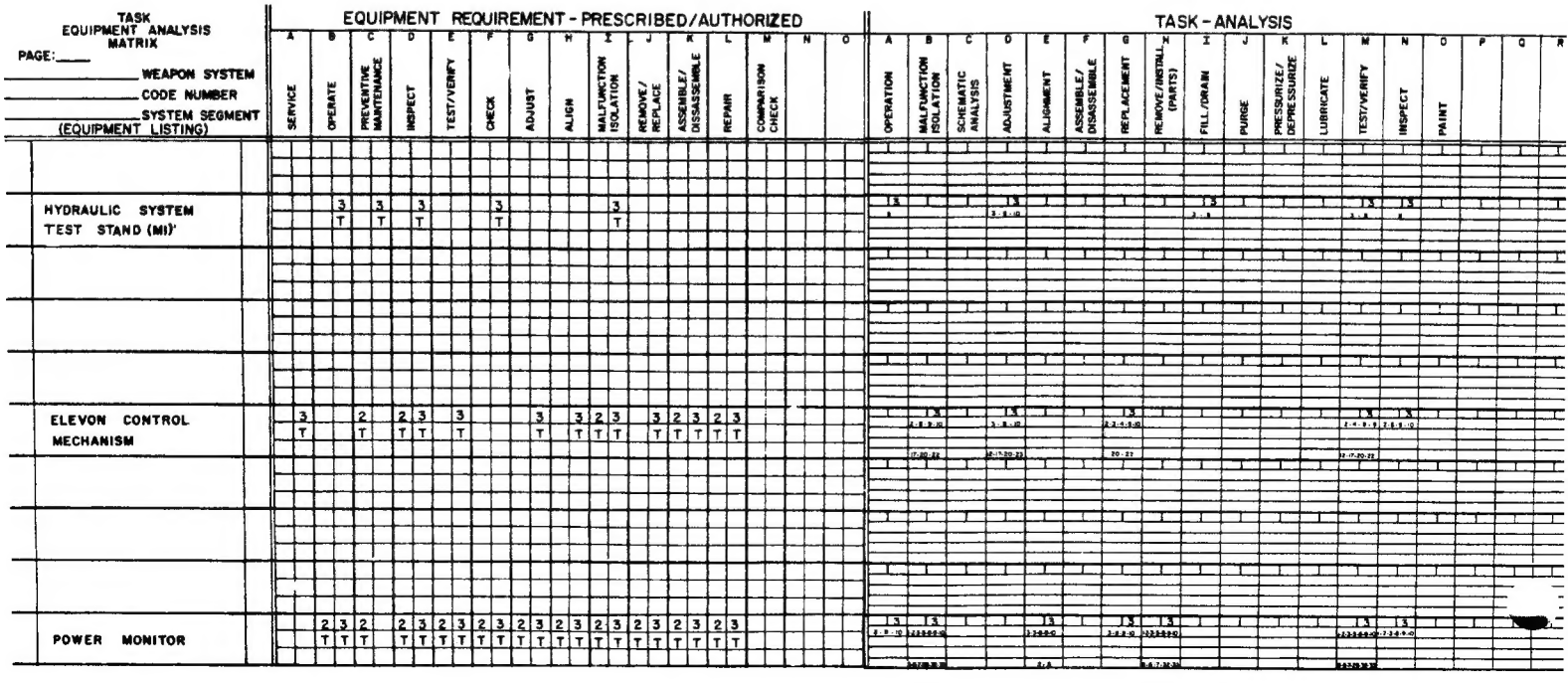
THE IMPACT OF PI

More important than what we are doing with PI, is the impact this new method has had on non-programed instruction.

Most of the schools previously mentioned as particularly active with programed instruction have formal programs with objectives in behavioral or Mager form. This is a direct outgrowth of their initial effort with PI. It is of interest, and I believe significant, that a number of the early PI enthusiasts have shifted their interest to objectives and curriculum analysis. They have become enthusiastic about the "systems approach" to training, the term mentioned so frequently during last year's meeting.

An early effort with programed instruction is directly responsible for a major and now routine program of curriculum analysis at one of our schools. Their program is over three years old and is based on task analysis. Their task analysis approach is somewhat unusual; they perform an analysis of the maintenance tasks through a minute examination of the equipment rather than through observation and interrogation of the job holder. This school uses a form, the left-hand part of which is shown in Fig. 2 and the right-hand part in Fig. 3. Figure 2 illustrates only part of the entries. The left-hand vertical column shows a breakdown of the entire weapons system to its smallest maintainable item; actually, the objects acted upon. Across the top of the page, from left to right, is a section which identifies the jobs authorized and required by the various categories of maintenance and an analysis of the tasks performed—a total of 28 actions. A check is made to show the object-action relationship. Additionally both skills and knowledges are identified by coded numbers and entered in the chart as applicable to each object-action relationship. 170 pages like this were required for their analysis of the Pershing missile system. Each page will include 10 to 15 objects. This school is constantly adjusting its curriculum based upon the results obtained from such efforts.

Task analysis of a more conventional variety—interview and observation of job incumbents—has been a routine activity at another



of our schools for over three years. Theirs is a most complete application of the systems approach to training, from task analysis to objectives to criterion tests to complete redesign of the course to quality control of the training.

The Adjutant General School has adopted the systems approach. Our initial results are most encouraging in spite of the changes they have caused.

Programed instruction has prompted an entirely new look at the way we design, conduct, and manage training. Several of our schools, including my own, have abandoned the bell curve as the criterion for good examinations. More changes, necessary ones, will come. Programed instruction should be given a large share of the credit for promoting these changes.

PREDICTIONS

I have been asked to make some predictions for the next five years. First, I do not see a great increase in the number of programs developed for pieces and parts of our present courses. This activity will continue but with no significant acceleration. The shape and mold of our existing courses is just not compatible with PI. The continual conflict raised by the piece-meal applications of PI will continue to dampen our enthusiasm.

Second, I predict, hopefully, increasing use of the systems approach with our training; the approach inherent in PI. Three of our schools are well underway in applying this approach. Several others have made preliminary efforts in this direction.

Third, I suggest that as we learn that pretested training programs can produce results, there will be more of such training packages in our on-the-job-training programs. This last may in the long run radically alter the traditional roles of the service schools.

Fourth, we will see in the next five years, the beginning exploration of computerized training. Here, PI has given us the rationale for using the vast potential of the computer in training.

Our effort and progress with PI are significant. More significant, PI is effectively popularizing a philosophy of training, old as an idea, but new as far is its being applied.

BIOGRAPHICAL DATA

James L. Sherrill received his B.A. and M.A. from George Peabody College, the last degree in 1963.

Mr. Sherrill has been employed by the Department of the Army as an educational specialist for the past twelve years. He first served with the U. S. Army Aviation School at Fort Rucker, Alabama and was instrumental in the school's initial efforts with Programed Instruction. His next assignment was with United States Continental Army Command, Fort Monroe, Virginia as staff specialist in programed instruction and new curriculum development techniques. He is now Educational Advisor to the U. S. Army Adjutant General School, Fort Benjamin Harrison, Indianapolis.

The paper was presented at the NSPI convention this year.

Army regulations require that we point out that the opinions expressed here are those of the author and do not necessarily represent the position of Dept. of the Army.